NAGPRA/ARPA Damage Assessment: Trafficking in Native American Human Remains and Associated Funerary Objects

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SUMMARY

Special Agent Jeffrey D. Pascale purchased Native American human remains and associated funerary objects offered for sale by Courtney C. Smith, Jr. in Virginia in violation of both the Native American Graves Protection and Repatriation Act and the Archeological Resources Protection Act. The following values were determined as a result of this unauthorized offer and sale:

Repair and Restoration	$26,781.76
Commercial Value of Artifacts	$ 1,500.00
Archeological Value	$16,693.88

The felony threshold for ARPA violation is monetary damage in excess of five hundred (500) dollars. The monetary amount is determined by combining (1) the cost of repair and restoration and the commercial value of the resource or (2) the cost of restoration and repair and the archeological value of the resource. In example (1) this amount is $28281.76 and in example (2) the amount is $43475.64. In both instances, the felony threshold is substantially exceeded.

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1. Introduction

Special Agent Jeffrey D. Pascale purchased from Courtney C. Smith, Jr. human remains and associated funerary objects, including two skulls and two feet partially encased in leather and textiles, offered for sale in Virginia in violation of the Native American Graves Protection and Repatriation Act of 1990 (Pub. L. 101-601) (NAGPRA) and the Archeological Resources Protection Act of 1979 (ARPA).

The offer to sell, or sale of human remains is a violation of NAGPRA §1170 (a). Illegal Trafficking in Native American Human Remains and Cultural Items:

> *Whoever knowingly sells, purchases, uses for profit, or transports for sale or profit, the human remains of a Native American without the right of possession to those remains as provided in the Native American Graves Protection and Repatriation Act shall be fined in accordance with this title, or imprisoned not more than 12 months, or both, and in the case of a second or subsequent violation, be fined in accordance with this title, or imprisoned not more than 5 years, or both.*

The offer to sell, or sale of human remains is a violation of ARPA Sec. 6 (c):

> *No person may sell, purchase, exchange, transport, receive, or offer to sell, purchase, or exchange, in interstate or foreign commerce, any archaeological resource excavated, removed, sold, purchased, exchanged, transported, or received in violation of any provision, rule, regulation, ordinance, or permit in effect under State or local law.*

The sale of human remains in Virginia is a violation of State Code § 32.1-289.1. Sale of body parts prohibited; exceptions; penalty:

> *With the exception of hair, ova, blood, and other self-replicating body fluids, it shall be unlawful for any person to sell, to offer to sell, to buy, to offer to buy, or to procure through purchase any natural body part for any reason including, but not limited to, medical and scientific uses such as transplantation, implantation, infusion, or injection. Nothing in this section shall prohibit the reimbursement of expenses associated with the removal and preservation of any natural body parts for medical and scientific purposes. This section shall not apply to any transaction pursuant to Article 3 (§ 32.1-298 et seq.) of Chapter 8 of this title. Any person engaging in any of these prohibited activities shall be guilty of a Class 6 felony.*

The sale of Native American cultural items without right of possession is a violation of NAGPRA §1170 (b). Illegal Trafficking in Native American Human Remains and Cultural Items:

> *Whoever knowingly sells, purchases, uses for profit, or transports for sale or profit any Native American cultural items obtained in violation of the Native American Grave Protection and Repatriation Act shall be fined in accordance with this title, imprisoned not more than one year, or both, and in the case of a second or subsequent violation, be fined in accordance with this title, imprisoned not more than 5 years, or both.".*

The associated leather and textiles are classified under NAGPRA as associated funerary objects; objects defined in NAGPRA Sec. 2 (3)(A) that:

> *…as a part of the death rite or ceremony of a culture, are reasonably believed to have been placed with individual human remains either at the time of death or later, and both the human remains and associated funerary objects are presently in the possession or control of a Federal agency or museum, except that other items exclusively made for burial purposes or to contain human remains shall be considered as associated funerary objects.*

This document identifies the value of damages resulting from violations of these laws in accordance with *43CFR Part 7: Protection of Archeological Resources Subpart A-- Uniform Regulations* by establishing the following values: Cost of restoration and repair, commercial value, and archeological value.

2. Method of Assessment

The determination of damages contained within this document is in conformance with the *Secretary Of The Interior's Standards and Guidelines For Archeology and Historic Preservation* (DO-28 Appendix C). All personnel associated with the project meet the professional qualifications standards contained within that same document. These are:

Douglas Owsley: *Department of Anthropology, Smithsonian Institution*
Karin Bruwelheide: *Department of Anthropology, Smithsonian Institution*
Bill Billeck: *Office of Repatriation, Smithsonian Institution*
Beth Eubanks: *Office of Repatriation, Smithsonian Institution*
Robert Adams: *Plant Biotechnology Center, Baylor University*
Allen H. Cooper: *Philadelphia Support Office, National Park Service*

3. Damage Assessment of Archeological Resources

Damage assessment to Federally owned or controlled archeological resources in violation of the Archeological Resources Protection Act of 1979, as amended (16 U.S.C. 470aa-470mm) can be obtained by determining three values: cost of restoration and repair to the resource, commercial value, and archeological value. Guidelines for conducting such assessments to determine a monetary value are contained in *36 CFR 43.14*. The criteria for determining these values and the values obtained are as follows:

3.1. Cost of Restoration and Repair

> ...the cost of restoration and repair...shall be the cost already incurred for emergency restoration and repair, which may include, but need not be limited to, the cost of the following: (1)reconstruction of the archeological resource; (2)stabilization of the archeological resource; (3)ground contour reconstruction and surface stabilization; (4)research necessary to carry out reconstruction or stabilization; (5)physical barriers or other protective devices, necessitated by the disturbance of the archeological resource, to protect it from further disturbance; (6)examination and analysis of the archeological resource including recording remaining archeological information, where necessitated by disturbance, in order to salvage remaining values which cannot be otherwise conserved;

(7)reinterment of human remains...; and (8)preparation of reports relating to any of the above activities (7 CFR 43.14 (C)).

Because the archeological site from which the human remains and associated funerary objects were removed is unknown, the cost of restoration and repair is limited to items (6), (7), and (8) above. If the site of origin of the human remains and associated funerary objects were known, all items would be included and the value of damages increased. The following represents the *minimum* value of the cost of restoration and repair.

3.1.1. Item (6) Examination and Analysis:

The human remains and associated funerary objects were examined by personnel of the Smithsonian Institution and determined to be from Native American gravesites most likely from the southwestern United States dating to the Prehistoric and Historic periods (Appendix 1).
The costs associated with examination and analysis are:

Table 1: Costs associated with Item (6): Examination and Analysis				
Activity	Personnel	Cost/Hour	Hours	Total
Bone Analysis	Douglas Owsley	$50.52	16	$ 808.32
Bone Anlaysis	Karin Bruwelheide	$18.15	24	$ 435.60
Textile Analysis	Beth Eubanks	$15.93	24	$ 383.32
			TOTAL	$1627.24

3.1.2. Item (7) Reinterment of Human Remains:

The repatriation of human remains and associated funerary objects in possession of a Federal Agency is governed by extensive and precise legislation within NAGPRA Section 7 (Repatriation):

> *(3) The return of cultural items covered by this Act shall be in consultation with the requesting lineal descendant or tribe or organization to determine the place and manner of delivery of such items.*
> *(4) Where cultural affiliation of Native American human remains and funerary objects has not been established in an inventory prepared pursuant to section 5, or the summary pursuant to section 6, or where Native American human remains and funerary objects are not included upon any such inventory, then, upon request and pursuant to subsections (b) and (e) and, in the case of unassociated funerary objects, subsection (c), such Native American human remains and funerary objects shall be expeditiously returned where the requesting Indian tribe or Native Hawaiian organization can show cultural affiliation by a preponderance of the evidence based upon geographical, kinship, biological, archaeological, anthropological, linguistic, folkloric, oral traditional, historical, or other relevant information or expert opinion.*

The human remains most likely were removed from three different gravesites since they date from three distinct times:

Item	Radiocarbon Assay	Date
Skull (S199-7)*	460 +/- 40 years	1540 +/- 40 years
Skull (S199-9)*	620 +/- 40 years	1380 +/- 40 years
Feet **		1840-1860

*See Appendix 1 ** See Appendix 2

For the purposes of assessing the minimal cost of restoration and repair it will be assumed that all three sets of remains were removed from the same gravesite (one in use from about 1340 through 1860, thus limiting the required actions to a single initial consultation and single repatriation. The human remains and associated funerary objects cannot at the present time be definitively affiliated with a specific Indian tribe or Native Hawaiian organization. Expert analysis has determined that the human remains and associated funerary objects most likely were removed from the American Southwest. NAGPRA Regulations *43CFR10 Sec.10.11 Disposition of culturally unidentifiable human remains* has been reserved for future use; no specific guidance has been promulgated. However, in order to implement the requirements of NAGPRA Section 7(4), the following standard activities have been developed for National Park Service consultations for culturally unidentifiable human remains:

1) All of the Indian Tribes that are likely to be affiliated with the human remains and associated funerary objects must be consulted to notify them of their existence and to invite their input for repatriation. This process is most expeditiously conducted at a single consultation event in which all of the potentially affiliated Tribes are invited to attend.
2) The human remains and associated funerary objects must be delivered to the Indian Tribe or Native Hawaiian organization under terms identified in consultation with the affiliated group.

The normal process for consulting about repatriation and disposition of human remains and funerary objects is to send letters to all possibly culturally affiliated tribes, follow with phone calls to determine tribal interest in repatriation, and have a general consultation meeting of participating tribes to determine appropriate means of repatriation. Following the meetings and development of repatriation agreement documents, the process of selecting the place and means for reinterment takes place. Depending on the specifics of the situation, the whole process takes about a year to complete.

Consultation about human remains and funerary objects from the Southwest generally involves about 30 tribes. The Pueblos include Acoma, Cochiti, Isleta, San Felipe, Santa Ana, Santo Domingo, Jemez, Zia, Laguna, Zuni, Sandia, Nambe, San Juan, Picuris, Santa Clara, Pojoaque, Taos, San Ildefonso, Tesuque, Isleta del Sur and the Hopi Tribe. In addition to the Pueblos, consultation includes the Navajo Nation, the Jicarilla Apache Tribe, the Mescalero Apache Tribe, the Ute Mountain Utes, the Southern Ute Tribe, the San Juan Southern Paiutes, the Kaibab Paiutes, and possibly other members of the Paiute Consortium and additional Apache tribes.

Consultation costs include the cost of two NPS staff members to plan the meeting, to prepare and mail letters, make follow up phone calls and arrange the logistics of a consultation meeting. Costs of the consultation meetings themselves generally include attendance by two members of each tribe, including mileage (through a consultation fee), lodging, and per diem. Support costs include professional court reporting services to obtain an accurate and unbiased transcript of the proceedings and copying costs for duplication of all relevant documents, studies, etc. for use of the participants. The consultation meeting will result in the selection of one or more tribes to which the unaffiliated remains will be repatriated. A second repatriation consultation meeting will be conducted to determine the location, method, and responsibilities of all parties to conduct the reinterment. The costs associated with the reinterment meeting will duplicate those of the initial consultation. Costs for repatriation and reinterment, depending on the location of the reinterment, include, at a minimum, the costs to do archeological compliance, prepare and environmental assessment, prepare the burial location, facilitate proper ceremonial activities and conclude the reburial. Because thses factors are currently unknown and can vary widely, they are not included in this assessment. The costs associated with Item 7 are presented in Table 2 and totals $23,556.92.

Table 2: Cost of Repatriation and Reinterment

ACTIVITY	SUB-ACTIVITY	PERSONNEL	WAGE/HOUR	HOURS	AMOUNT
CONSULTATION PLANNING	Coordinate Consultation	Ethnographer GS-13	$35.72	80	$2,857.60
CONSULTATION PLANNING	Prepare Consultaion Notification	Ethnographer GS-12	$30.00	40	$1,200.00
CONSULTATION PLANNING	Distribute Notification	Secretary GS-5	$13.67	8	$109.36
CONSULTATION	Conduct Consultation	Ethnographer GS-13	$35.72	16	$571.52
CONSULTATION	Obtain and Prepare Facilitites	Secretary GS-5	$13.67	16	$218.72
CONSULTATION	Document Proceedings	Contact Court Reporter	$1,500.00	1	$1,500.00
CONSULTATION	Facility	Facility rental	$450.00	2	$900.00
CONSULTATION	Per Diem	Per Diem	$101.00	60	$6,060.00
CONSULTATION	Consultation fee	Consultation fee	$100.00	60	$6,000.00
CONSULTATION	Duplication of documents	Duplication of documents	$5.00	80	$400.00
REPATRIATION	Conduct Repatriation Meeting	Ethnographer GS-13	$35.72	16	$571.52
REPATRIATION	Facility	Facility rental	$450.00	1	$450.00
REPATRIATION	Document Proceedings	Contract Court Reporter	$1,500.00	1	$1,500.00
REPATRIATION	Per Diem	Per Diem	$101.00	4	$404.00
REPATRIATION	Consultation fee	Consultation fee	$100.00	4	$400.00
REPATRIATION	Prepare remains for repatriation	Curator GS-09	$20.71	20	$414.20
REPATRIATION	Prepare site for reinterment	Backhoe and operator			$0.00
TOTAL					**$23,556.92**
CONSULTAITON PLANNING					$4,166.96
CONSULTATION					$15,650.24
REPATRIATION					$3,739.72
TOTAL					**$23,556.92**

3.1.3. Item (8) Preparation of Reports:

The costs associated with the preparation of this report are presented in Table 3:

Table 3: Costs associated with Item (8): Preparation of Reports				
Activity	Personnel	Cost/Hour	Hours	Total
Report Preparation	Allen Cooper	$39.94	40	$1597.60
			TOTAL	$1597.60

The total costs for restoration and repair (the sum of items 6, 7, and 8) is **$26,781.76.**

3.2. Commercial Value

Special Agent Pascale purchased the two skulls for $500.00 and the feet and associated textiles were purchased for $1000.00. The total for the items was **$1500.00** which is the commercial value of the items as established by the seller who had a demonstrated knowledge of current retail prices for Native Americana, as recorded by Special Agent Pascale.

3.3. Archeological Value

3.3.1. Research Design

The investigation of archeological resources by the National Park Service is governed by *The Secretary of the Interior's Standards and Guidelines for Archeology and historic Preservation* (DO-28 Appendix C). The NPS *Management Policies* provides that "archeological resources will be left undisturbed unless removal of artifacts or intervention into fabric is justified by protection, research, interpretive, or development requirements. When necessary, investigations will be conducted under the standards expressed in DO-28:

> *Archeological research typically involves defining theoretical orientation and methodological approaches, identifying and evaluating resources, describing field work, analyzing and synthesizing data recovered, professionally reporting and interpreting results, and conserving data, associated records, and materials. Research may employ nondestructive and destructive methods and may include field surveys, data recovery, and interdisciplinary studies like archival research, geomorphological studies, palynological studies, oral histories, ethnohistories, and analysis of extant collections. Research is conducted by qualified individuals from the NPS, other government agencies, contractors, educational and scientific institutions, and other organizations.*

All archeological activities conducted within the National Park Service are conducted under a prepared research design (*Director's Orders 28*: 2.17) which identifies the resources to be examined, the important research questions which will be addressed, the field methodology employed to collect the data, laboratory and curation activities

that will be used to ensure the collection's long-term security and accessibility, and the method for disseminating the results of the investigation.

Archeological significance is defined by Criterion D of the National Register of Historic Places as properties that possess "…integrity of location, design, setting materials, workmanship, feeling, association.." and "…that have yielded, or may be likely to yield, information important in prehistory or history" (*National Register Bulletin 36*:24). Under Criterion D, integrity of association is measured in terms of the strength of the relationship between the site's data or information and the important research questions which may be either of a general or specific nature (*National Register Bulletin 36*: 32).

Important Research Questions

Archeological investigations are distinguished by a scientific approach to excavation and analysis based on the identification and pursuit of research hypotheses (questions) and test implications (Watson, LeBlanc, and Redman 1971:28-29) known as "processual archeology." Investigations that are not explicitly scientific are not archeology. Important archeological information can be derived from the study of human remains and their grave sites. These studies are particularly useful in large skeletal populations to determine the range of variation within that population. They are particularly not useful when conducted on fragmentary skeletal materials that are unprovenienced. When individuals are removed from consideration from a study by their removal, the population is less able to provide good evidence.

Important research questions that may be addressed through analysis of skeletal material and that could have been addressed from the purchased remains and associated funerary objects if they had been left undisturbed are:

1. How old was the individual when they died?
2. What was their gender?
3. What was their ethnicity?
4. What trauma did they suffer from? What can be deduced about their subsistence practices from it?
5. How was trauma treated? Was the treatment effective?
6. Did the individual experience any nutritional deficiencies at any time within their life?
7. Did the individual possess any pathological anomalies that are consistent with the overall population?
8. What time of year did the individual die?
9. Was their place of interment their initial gravesite?
10. What was the social status of the individual?

Anthropologists often obtain data on health, disease, and death from ancient populations using the methods of paleopathology, the study of ancient disease. Paleopathology not only gives us a glimpse into conditions in ancient populations. It also contributes to our evolutionary perspective of disease. By looking at populations in different environments over time, we may be able to gain insights into the long-term relationships of human biology, culture, and disease. An example of the use of paleopathology is to document changing patterns of disease and health that took place during the transition from hunting and gathering to agriculture during human history.

The primary source of paleopathological information is skeletal remains. Inspection of bones is augmented with X-rays, chemical analysis and other laboratory methods. Such studies can tell us something of an individual's history of health and disease, and often the age and cause of death. Diseases such as osteoarthritis may affect bones directly. Other diseases such as syphilis and tuberculosis may leave indications of their effects on the skeletal system. Physical traumas due to injuries or violence often leave detectable fractures. Signs of healing or infection tell of the long-term effects of such traumas. The next section will discuss some of the implications of paleopathology in recent human history.

A number of techniques are used to evaluate nutrition. Both skeletal and dental changes are noted.

(1) Wear on teeth and analysis of dental caries. High rates of dental caries are invariably associated with soft, sticky foods as with agricultural diets. The rate of wear and incidence of decay go up with the adoption of agriculture. The rate of wear in many agricultural people is often a result of grit from grinding stones.
(2) Iron deficiency causes anemia. When prolonged, perotic hyperostosis occurs--a distinctive porosity seen in the cranial vault or the eye sockets. The anemia itself can be caused by parasites or a variety of infections.
(3) Vitamin D deficiency causes legs to grow bent.
(4) Malnutrition or under-nutrition is inferred from skeletal measurements. A decline of stature of historic populations has been used to indicate nutritional status. Deciduous teeth in particular seem to be sensitive to nutrition.
(5) Certain infections leave specific traces in the skeleton. Tuberculosis leaves characteristic traces on the ribs and tends to destroy the bodies of the lumbar vertebrae. Infections from the treponema spirochete in yaws or syphilis can produce either local or widespread skeletal damage. When syphilis is congenital, it can leave the characteristic 'Hutchinson's incisor' defect. Leprosy is characterized by damage to the bones of the face, fingers, and toes.
(6) Various cancers are identifiable in the skeleton. Primary bone cancer is rare, but the skeleton is a common site for the secondary spread of cancerous growth from other tissues. Studies of rates of bone cancers in prehistoric populations suggest that they are extremely rare--even when the relative scarcity of elderly people is taken into account.
(7) Trauma in skeletons is clearly evident in bone fractures, especially when they have not healed successfully. It is often possible to distinguish between traumas resulting from a fall and a blow such as sustained in violence. Studies of Neandertal skeletons reveals that the pattern of fractures correlates well with those seen in contemporary rodeo riders. This implies close contact "of the dangerous kind" with large animals.
(8) The individual workload leaves traces in the skeleton. High rates of physical labor can appear as degenerative joint disease. Muscular development results in increasing size of muscle attachment areas on bone. Women who spend a lot of time grinding corn develop deltoid tuberosities similar to those that develop among modern bodybuilders.

(9) Growth-disrupting and growth-retarding stresses during childhood will leave transverse lines of dense bone visible in radiographs of long bones of the body. These are the so-called Harris lines. The formation of tooth enamel is also vulnerable to stress. When those are grossly visible to the naked eye, they are known as enamel hypoplasias. When visible only as lines in microscopic cross sections they are known as Wilson bands. Markers such as hypoplasia, Wilson bands, and Harris lines can be produced in the skeleton by a variety of stressors, including starvation, severe malnutrition and severe infection.
(10) The age of an individual at death can be determined based on the development and eruption of teeth (both deciduous and permanent) providing a fairly precise indicator of age up to fifteen years. Adult ages are harder to determine, since environment can also influence the rate of degeneration. Signs of degeneration include patterns of wear and other changes to the teeth; changes in the sutures of the skull bones, changes in the articular surfaces of the pelvis and changes in the microscopic structure of bone.

The soil within and surrounding the human remains also contains vital evidence about the lifeway of the person. Fossil pollen, fibers, seeds, and insect remains are invaluable in determining diet as well as the season of their interment. Important research questions may be addressed through the following specialized studies of the soil within or adjacent to the grave site are:

1. Paleoethnobotany: the study of seed and fiber remains associated with burials.
   - What was the diet of the person?
   - What medicines did they consume for their illness/trauma?
2. Forensic entymology: the study of insects associated with burials.
   - What season of the year was the person buried?
   - Was the person moved after burial to the present place of interment?
3. Paleoparasitology: the study of parasite remains associated with burials.
   - What parasites did the person contend with during their lifetime and what does that indicate about their environment?

Field Methodology Standards

1. All supervisory personnel will meet the Secretary of the Interior's Guidelines for Professional Qualifications Standards. The minimum professional qualifications in archeology are a graduate degree in archeology, anthropology, or closely related field plus:
   - At least one year of full-time professional experience or equivalent specialized training in archeological research, administration or management;
   - At least four months of supervised field and analytic experience in general North American archeology; and
   - Demonstrated ability to carry research to completion.

   In addition to these minimum qualifications, a professional in historic archeology shall have at least one year of full-time professional experience at a supervisory level in the study of archeological resources of the historic period (DO 28:55).

2. The following standards will be maintained in conformance Secretary of the Interior's Guidelines for Archeological Documentation (DO 28: Appendix C: 45).

   A site grid will be established to assist with horizontal control of the excavations as well as a site datum to maintain vertical control of the excavations. A total station laser transit will be employed for sub-centimeter accuracy.

   The following field records will be maintained; a catalog of field specimens where every excavated provenience is given a sequential number in the field, a photographic log, a list Of features, and a daily record of the observations and procedures conducted by the on-site field supervisor (the latter will include Feature Recording Forms and Level Recording Forms).

   If artifacts are identified in archeological features, the following standards will apply: If features are encountered during testing, they will be examined in the following manner: Features will be excavated by natural internal stratigraphy. If the observable stratum is greater than 0.2 feet thick, then excavation will proceed for that stratum in 0.2 feet thick arbitrary levels. Up to 10 gallons will be recovered from each feature for flotation for small flora and fauna analysis. Soil from feature fill which will be passed through 1/16 inch hardware cloth to ensure adequate faunal and gross botanical recovery.

Artifact and Archival Cataloging:

Each object will be fully cataloged with the identifying letters and numbers as designated by the Park Curator. Each object or lot shall then be cataloged to the standards as set forth by the NPS *Museum Handbook*. *A*ny directions supplemental to the *Museum Handbook* shall be provided by the Park Curator and/or Park Archeologist. The most significant objects shall be photographed according to the procedures in the *Museum Handbook.*

Field books, inventory sheets, reports, correspondence, maps, drawings, photographs, slides, and other associated documentation shall be cataloged according to standards set forth by the *Museum Handbook* with supplemental directions provided by the Park Curator. All materials will be contained in acid-free folders, boxes, and artifact bags. Number 2 lead pencils shall be used to mark folders.

All catalog cards shall be entered into a computer using the Rediscovery (ANCS+) system that has been developed by the NPS. Both the artifacts and associated documentation shall be entered into the computer. All work and files shall be done as to be fully compatible with ANCS+ and reproducible on the following software combination: ANCS+, Microsoft Access, and Microsoft Windows 95.

Dissemination of Results:

Fifty (50) copies of the report shall be printed and distributed in accordance with DO28 Appendix D: Distribution/Availability of Final Cultural Resource Reports. Prior to distribution the report must be evaluated for availability according to 43 CFR Part

7.18(a)(1).

3.3.2 Implementing the Research Design

Table 4 presents the allocation of resources necessary to implement the research design that addresses the important research questions that compose the Criterion D significance of the resources damaged by the unauthorized excavation. This represents to the costs to conduct the excavation, conduct the analysis of the materials and associated soil, and publish the results. This is the archeological value of the damaged resources and totals **$16,693.88**.

Table 4: Archeological Value

ACTIVITY	SUB-ACTIVITY	PERSONNEL	WAGE/ HOUR	HOURS	AMOUNT
RESEARCH DESIGN	Design Archeological Work	Archeologist GS-12	$31.47	12	$377.64
RESEARCH DESIGN	Word Processing	Secretary GS-5	$14.32	4	$57.28
RESEARCH DESIGN	Map Production	Scientific Illustrator GS-7	$17.74	12	$212.88
FIELDWORK	Establish Survey Control	Archeologist GS-11	$26.26	4	$105.04
FIELDWORK	Establish Survey Control	Archeology Technician GS-5	$14.32	4	$57.28
FIELDWORK	Controlled Excavation	Archeologist GS-11	$26.26	40	$1,050.40
FIELDWORK	Controlled Excavation	Archeology Technician GS-5	$14.32	40	$572.80
FIELDWORK	Backfill and restore excavation units	Archeology Technician GS-5	$14.32	4	$57.28
FIELDWORK	Review and check field documents	Archeologist GS-11	$26.26	4	$105.04
FIELDWORK	Park coordination and administration	Archeologist GS-11	$26.26	4	$105.04
FIELDWORK	Film and processing	Film and processing	$13.00	4	$52.00
TRAVEL	Per Diem	Per Diem	$80.00	10	$800.00
TRAVEL	Vehicle Rental	Vehicle Rental	$40.00	5	$200.00
LABORATORY	Artifact Cleaning	Archeology Technician GS-5	$14.32	20	$286.40
LABORATORY	Artifact Analysis	Archeologist GS-12	$31.47	24	$755.28
LABORATORY	Artifact Analysis	Archeology Technician GS-5	$14.34	24	$344.16
LABORATORY	Skeletal Analysis	Archeologist GS-12	$31.47	24	$755.28
LABORATORY	Skeletal Analysis	Archeology Technician GS-5	$14.32	24	$343.68
LABORATORY	Paleoparasitological study	Archeologist GS-12	$31.47	60	$1,888.20
ACTIVITIES	Paleoethnobotanical study	Archeologist GS-12	$31.47	60	$1,888.20
LABORATORY	Forensic entymology study	Archeologist GS-12	$31.47	60	$1,888.20
CURATION	ANCS Cataloging	Archeologist GS-11	$26.26	24	$630.24
CURATION	ANCS Cataloging	Archeology Technician GS-5	$14.32	40	$572.80
CURATION	Bags and supplies	Bags and supplies	$75.00	1	$75.00
CURATION	Archival Box Curation	Archival Box Curation	$250.00	4	$1,000.00
REPORT	Write Report	Archeologist GS-11	$26.26	40	$1,050.40
REPORT	Prepare Figures and Maps	Scientific Illustrator GS-7	$17.74	40	$709.60
REPORT	Word Processing	Secretary GS-5	$14.32	24	$343.68
REPORT	Copy Editing	Writer/Editor GS-11	$26.26	8	$210.08
REPORT	Collating, Printing, Binding	Collating, Printing, Binding	$200.00	1	$200.00
TOTAL					$16,693.88

RESEARCH DESIGN	$647.80
ARCHEOLOGICAL FIELDWORK	$2,104.88
TRAVEL	$1,000.00
LABORATORY	$8,149.40
ACTIVITIES	
CURATION	$2,278.04
ACTIVITIES	
REPORT PREPARATION/PRODUCTION	$2,513.76
TOTAL	$16,693.88

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1997 Cultural Resource Management Guideline. United States Department of the Interior. Washington, DC.

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1971 *Explanation in Archeology: An Explicitly Scientific Approach*. Columbia University Press. New York.

Appendices

APPENDIX 1: Analysis of Human Remains and Artifacts from the National Park Service (Forensic case S199-7, S199-8, S199-9)

Case S199-7

Present are a complete cranium and mandible of a female aged 18 to 22 years. A sex of female is based on the morphology of the cranium and mandible. The cranium is gracile with little development of the supraorbital region and nuchal ridge. No occipital protuberance is noted. The mastoid processes and malars are small. The frontal bone displays moderate bossing and the eye orbits have sharp superior margins. The mandible is also gracile with an obtuse gonial angle and small mandibular condyles. Gonial eversion is lacking and the mental symphysis is pointed. The mandibular body height is relatively short and tooth size is small to moderate. The age determination is based on complete tooth root formation, slight tooth wear, complete union of the basilar suture and near complete union of the incisive sutures. The coronal, sagittal, and lambdoidal sutures are open ectocranially and endocranially.

Preservation of the remains is consistent with an archaeological context. The bones are yellow to brown in color with a slight orange hue. Erosion of the outer table is noted on a majority of the superior vault and zygomatic arches. Small areas of moderate erosion have resulted in the exposure of diploe on the right half of the frontal anterior to the coronal suture, the right zygomatic process of the frontal, the inferior border of the right malar, and on the lateral aspect of the left mandibular condyle. Faint root etching is evident on the temporal bones, inferior aspect of the occipital, and mandibular body. The anterior aspect of the right temporal exhibits a circular defect consistent with a probe hole. The defect has a diameter of 10 mm. The presence of a probe hole indicates the remains were buried prior to recovery and the right side of the cranium was oriented superiorly.

The skull displays American Indian features including a straight transverse palatine suture, no zygo-maxillary suture recurvature, a heart-shaped and fairly broad nasal aperture, low relief of the nasal bones, a parabolic- shaped palate, a relatively flat mid-face with prominent malars, and unintentional modification of the vault characterized by slight occipital flattening. The flattening affects the left side of the posterior vault more than the right, producing slight asymmetry in the overall cranial form, which is moderately short and wide. The skull was measured for comparison with American White, Black and Indian reference groups. Morphometric analysis was done using the Fordisc 11 statistical program developed by the University of Tennessee. Results of the analysis showed that the skull is most similar to American Indians.

Nonmetric traits observed on the skull include an ossicle in the right lambdoidal suture, an ossicle at asterion (left side), an ossicle in the masto-occipital suture (right side), parietal notch bones (both sides), a pharyngeal fossa and tubercle, and two mental foramina on the right side of the mandible.

To confirm the American Indian affiliation suggested by the above observations an AMS radiocarbon age of the specimen was obtained using a small portion of the right coronoid process. The UCR Radiocarbon Laboratory of the University of California, Riverside determined the age to be 460 +/- 40 years BP.

Based on gross examination of the skull, morphometric analysis, and the radiocarbon date, the remains are identified as American Indian. Affiliation with a particular tribe is more problematic, although some classification is possible. Based on patterns of tooth wear and dental pathology, this individual originates from an agricultural context. The maxillary and mandibular teeth display blunting of the tooth cusps with slight dentin exposure on the incisors and canines. Two maxillary teeth have been lost postmortem. Antemortem loss has occurred for the left and right mandibular first molars. The sockets for the mandibular first molars exhibit near complete resorption. The remainder of the maxillary and mandibular teeth are present in their sockets. Carious lesions are noted on six mandibular teeth and at least four maxillary teeth. The left mandibular third molar and the right mandibular second premolar and second molar have large carious lesions destroying one-fourth to one-half of the tooth crowns. Pulp exposure is evident on the right second premolar and second molar. Abscessing of the right mandibular second molar has resulted in subperiosteal bone formation on both the facial and lingual surfaces of the mandibular horizontal ramus. The left mandibular second and right third molars have slight carious destruction of the occlusal crown surfaces. The mandibular left second premolar also has slight decay evident in its distal interproximal surface. On the maxillae, the left second premolar has moderate carious destruction of its mesial-interproximal crown surface. Three other maxillary teeth exhibit slight decay. Slight tooth wear in conjunction with extensive dental caries reflects a diet heavily dependent on maize agriculture.

Preservation and the morphology of the skull, and additional evidence of an agricultural-based society, is most consistent with Pueblo groups of the American southwest. Occipital flattening is also common in Pueblo populations. Further assessment of tribal affiliation will require detailed morphometric comparisons using documented reference samples from the Southwestern United States.

Case S199-8

Present is a partial cranium and nearly complete mandible of a female aged 30 to 39 years. A sex of female is based on the morphology of the cranium and mandible. The cranium and mandible are gracile. The cranium exhibits small mastoids, a lack of supraorbital brow and nuclial ridge development, and only slight roughening of the muscle attachment sites. The mandible has a relatively low mental eminence, a narrow ascending ramus, a small right mandibular condyle, and trace gonial eversion. An age of 30 to 39 years is based on complete closure of the basilar suture, beginning ectocranial closure of the coronal and right lambdoidal sutures, near complete closure and obliteration of all endocranial sutures, no antemortem mandibular tooth loss, and slight degenerative changes of the left temporal fossa.

Preservation of the remains is consistent with an archaeological context. The bone is dry and light yellow in color. The occipital bone is lighter in color than the remainder of

the cranium and is slightly sun-bleached. A small area of faint green staining, identified as algae discoloration, is present on the left inferior aspect of the occipital. Slight erosion of the outer cortex is visible on a majority of the vault. The right side of the frontal bone has an area of moderate erosion resulting in exposure of the underlying diploe. Dirt adheres to the outer and inner tables of the cranium and is embedded within the partially represented superior nasal chamber, in areas of exposed diploe, and in the empty socket of the right third mandibular molar. Postmortem damage is evident in the face, basilar region and superior aspect of the cranium. A majority of the facial bones have broken off and are missing. The nasals are partially represented and the frontal process of the left maxilla remains partially intact. The zygomatic arches have been damaged postmortem and are not represented. The basilar aspect of the cranium has postmortem breakage of the occipital condyles with an area of damage exhibited on the right half of the sphenoid. The superior aspect of the vault has a linear defect consistent with damage caused by a shovel. The defect measures approximately 35 mm in length with a maximum width of approximately 4 mm. Dirt is embedded in the defect, but the exposed margins of the cut are white and consistent with postmortem damage as opposed to a perimortem wound. The mandible has postmortem damage to portions of the left ascending ramus, including the coronoid process and condyle. The mandible differs in color from the cranium and has a white, sunbleached appearance. Based on the patterns of discoloration and erosion described above, the mandible was likely exposed prior to the recovery of the remains and the occipital portion of the cranium may also have been partially or fully exposed.

Although there are notable differences in preservation between the mandible and cranium, the bones belong to a single individual. The mandible and cranium both display female traits and are consistent with an adult aged 30 to 39 years. The right mandibular condyle articulates well within the right temporal fossa and despite the absence of the left condyle, the breadth of the mandibular body corresponds to the breadth of the inferior cranium.

Population affiliation based on gross examination is limited due to the missing facial bones. The cranium has not been artificially reshaped. The mandible has a parabolic form most consistent with American Indian populations. Nonmetric traits observed on the skull include an ossicle in the masto-occipital suture (left side) and a small pharyngeal tubercle. Bone preservation suggests an archaeological context.
To further address the question of affiliation, the vault was measured for comparison with American White, Black and Indian reference groups. Morphometric analysis was done using the Fordisc 11 statistical program. Results of the analysis determined the cranial shape to be most similar to American Indians.

To confirm the American Indian affiliation suggested by the above observations an AMS radiocarbon age of the specimen was obtained using a small portion of the left coronoid process. The UCR Radiocarbon Laboratory of the University of California, Riverside determined the age to be 620 +/- 40 years BP.

Based on gross examination of the skull, morphometric analysis, and the radiocarbon date, the remains are identified as American Indian. Further assessment of tribal affiliation will require detailed morphometric comparisons using documented reference samples from across the United States.

Case S199-9

Present are the remains of left and right human feet. The foot bones are associated with several distinct types of textiles, fragments of animal hide and hair, and a fragment of bird bone. A summary of the associated non-human remains is included in this report and was prepared by Beth Eubanks, Museum Specialist, Office of Repatriation.

The human remains present include several articulating bones of an adult left foot and several loose bones of an adult right foot. Classification of the bones as "adult" is based on complete epiphyseal union, slight degenerative lipping of the distal joint of the right first metatarsal and size. Sex is identified as male based on the large size of the bones. The left foot bones present include: the calcaneus, navicular, cuboid, first, second, and third cuneiforms, metatarsals one through five, and proximal phalanges one, two, three and five. The bones are articulated with desiccated tissues of the foot, remnants of a moccasin, and fragments of woven textiles and animal hide.

The right foot is represented by the first, second, and third cuneiforms, metatarsals one through four, two sesmoids, four proximal phalanges, two middle phalanges, and three distal phalanges. The first proximal and distal phalanges are secured within the textiles and animal hide associated with the remains of the left foot. The toenail of the first right toe is visible next to the distal phalanx. The first proximal and distal phalanges are properly articulated, indicating the feet were once positioned together. However, their placement alongside the lateral-plantar aspect of the left foot indicates the right foot was crossed behind the left ankle. All of the bones have adhering fragments of desiccated human tissue. Desiccated tissue loosely connects the second and third cuneiforms. It also assists in the articulation of two proximal and two middle phalanges, and one of the two distal phalanges. The first metatarsal, a proximal phalanx, and one of the articulated proximal and middle phalanges also has adhering, small, thin strands of spun cordage and matted fibers.

Based on analysis of the associated non-human remains, the bones and textiles are identified as American Indian. The textiles suggest affiliation with American Indian groups of the southwestern United States.

Appendix II: Analysis Report on Textile Fragments, Leather and Additional Organic Debris Found with Human Remains, Forensic Case Accession Number S1 99-9 (NPS 99-CHSO-01)

By Beth Eubanks Museum Specialist, Office of Repatriation

Summary: Most of the textile fragments are consistent with fabrics produced by Southwestern tribes, particularly the Navajo, between approximately 1840 - 1860. Southwestern textiles were traded to and valued by many tribes, but the number of these textiles present indicates a person of Southwestern tribal affiliation. Other items with the remains are consistent with burial wrappings used by many tribes in the West and Southwest, including what appears to be the hide of American bison. One piece of juniper found adhered to a piece of leather has been identified as originating from the following areas in the Southwest: west Texas, New Mexico, Arizona, northern Mexico, and southern Colorado.

Analysis Results and Discussion
All of the fragments present with the human remains in case number SI 99-9 were most likely collected at the burial site; many of the textiles were also wrapped around/adhered to the remains. The fragments found loose were divided into the following major categories (see Table 1):
Approximately seven different textiles Fragments of different kinds of leather and hide Matted animal hair, possibly American bison, separated from a hide One piece of leather with a fragment of identifiable juniper adhered
One of the textiles, a silk ribbon, is of European or Euro-American manufacture which puts this burial in the historic period. The rest of the textiles are made of sheep's wool and are consistent with those manufactured by tribes in the southwest, particularly the Navajo. Navajo and Southwestern textiles were traded to and valued by members of other tribes all over the country. However, the possibility that a member of another tribe would have more than one or two items of Southwestern manufacture is low. I consulted with an expert on southwestern tribes, Bruce Bernstein, National Museum of the American Indian, who believes that the textiles were Navajo and dated to between 1840 - 1860 based on colors present.

The loose, matted hair is thick, dark brown and wavy; characteristics similar to sheep or bison fur. Microscopic comparison to the hair of sheep and American bison revealed a greater degree of similarity with bison. Fur from other mammals, such as bear, was not available for further comparison so the identification of bison is tentative.
A small fragment of juniper plant was found adhered to some leather. This fragment was

examined by juniper expert Dr. Robert Adams, Director, Plant Biotechnology Center, Baylor University. His conclusion is that the fragment probably belongs to one of three species: Juniperus monosperma, J coahuilensis, or J deppeana. The distribution range for these species falls in the American Southwest or northern Mexico, specifically west Texas, New Mexico, Arizona, northern Mexico, and southern Colorado.
In conclusion, the juniper fragment places this burial in the American Southwest or northern Mexico. The mummification of the remains is consistent with an arid environment and suggest that the remains were placed in an above-ground burial. The burial practice, abundance of Navajo textiles, and bison hide are consistent with a Navajo burial.